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Brief Clinical Report

Interstitial Deletion (6)q13q15

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We report on a 2-year-old child with psychomotor retardation, facial and urogenital anomalies. His chromosome constitution was 46,XY, del(6)(q13q15). This case further contributes to the karyotype-phenotype correlation of proximal deletion 6q syndromes.

KEY WORDS: chromosome 6q deletion, multiple congenital anomalies, umbilical hernia, inguinal hernia

INTRODUCTION

To date 20 cases of deletion of 6q have been reported. These include three cases with del(6)(q13q15) [McNeal et al., 1977; Yamamoto et al., 1986; Young et al., 1985], three cases with del(6)(q15q21) [Glover et al., 1988; Horigome et al., 1991; Nakagome et al., 1980], and two cases with del(6)(q16q22) [Cote et al., 1981; Schwartz et al., 1984]. The other 12 cases have variable deleted portions. Here we report on a child with del(6)(q13q15) associated with growth retardation, developmental delay, umbilical and inguinal hernias, and facial and urogenital anomalies and compare the phenotype with those of other reported 6q- cases.

CLINICAL REPORT

The propositus, a male, was the first child of healthy unrelated Arabic Moslem parents, a 28-year-old father and 25-year-old primigravid mother. The pregnancy was uncomplicated. He was born at term by cesarean section because of breech presentation. BW was 2,775 g (15th centile) and OFC 34.5 cm (35th centile). Apgar scores were 9 and 10 at 1 and 5 minutes, respectively. At birth a small umbilical hernia, dislocation of the left hip, and club feet were noted. The family history is noncontributory.

Initial examination was at 8 months for developmental delay, postnatal growth failure, and facial anomalies. Examination showed OFC to be 43.5 cm (10th centile), length 62 cm (−3.8 SD), and weight 5 kg (−6.6 SD). Facial anomalies (Fig. 1) included deep set eyes and small palpebral fissures, hypotelorism, nystagmus, blue sclerae, mongolian slant, mild synophris, big posteriorly rotated low set ears with large pinnae, low frontal hairline, slender nose with small anteverted nostrils, flat maxillae, high arched palate, micrognathia, a short frenulum, and a broad short neck. He had a small umbilical hernia (Fig. 2), a right inguinal hernia, micropenis, and left undescended testis. His

Fig. 1. Frontal and lateral view of patient at 2 years of age.

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Fig. 2. Abdomen of patient showing a small umbilical hernia.

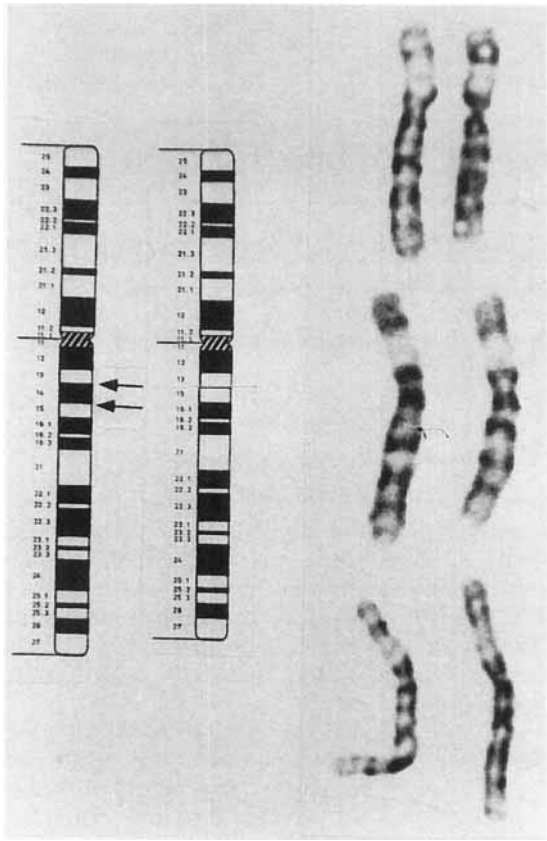

Fig. 3. Partial karyotype with the ideogram of chromosome 6 (500 band level) showing the breakpoints of the deletion marked by arrows followed by the normal chromosome 6 from a single cell.

hands had abnormal palmar (simian) creases and there was a small hemangioma on the back of the right hand. He had hyperextensible fingers and skin syndactyly of the 2nd and 3rd, and of the 3rd and 4th fingers. The wrists were hyperextensible and contractures were present at the elbows and the right knee. There was syndactyly of 2nd and 3rd toes and club feet. The skin was hyperelastic and redundant especially over the hands and the abdomen. Development assessment detected global developmental delay and generalized hypotonia, which was worse centrally. At 24 months, fine motor, receptive-expressive language and personal-social skills were consistent with those of a 15–18 months old. Gross motor skills were consistent with those of a 8–9 months old.

Cytogenetic studies showed 46,XY, del(6)(q13q15) karyotype both in patient's blood lymphocytes and skin fibroblasts (Fig. 3). High resolution studies of parental blood lymphocyte showed normal karyotype. Laboratory testing revealed borderline high values of TSH (2.9) and borderline low values of free T4 necessitating treatment with 25 microgram thyroxine per day. Kidney ultrasound revealed a normal right kidney and did not detect the left kidney. Cranial CT scan showed hypotelorism and mild enlargement of the lateral and third ventricles. CT scan of the lumbar spine disclosed a parasacral left kidney. Audiometry revealed normal hearing.

DISCUSSION

Twenty cases with interstitial deletion of 6q have been reported [Bzaduck and Lukacova, 1989; Cote et al., 1981; Glover et al., 1988; Horigome et al., 1991; Ito et al., 1989; Kueppers et al., 1977; Lonardo et al., 1988, Matkins et al., 1987, McLeod et al., 1990; McNeal et al., 1977; Nakagome et al., 1980; Park et al., 1988; Schwartz et al., 1984; Slater et al., 1988; Schintzel et al., 1984; Turleau et al., 1988; Yamamoto et al., 1986; Young et al., 1985]. Relevant to this case report are a case of del(6)(q11q15) [Slater et al., 1988], a case of del(6)(q12q14) [Lonardo et al., 1988], three cases of del(6)(q13q15) [McNeal et al., 1977; Yamamoto et al., 1986; Young et al., 1985], and one case of del(q14–q16) [Turleau et al., 1988] (Table I). All cases with proximal deletions (cen→q15) have umbilical hernia and delayed development (Table I). The three cases with del(6)(q13q15) [McNeal et al., 1977; Yamamoto et al., 1986; Young et al., 1985] all had psychomotor retardation, feeding problems, and hernias. A left ectopic kidney was described in one case [McNeal et al., 1977] and congenital heart defect occurred in the two other cases [Yamamoto et al., 1986; Young et al., 1985].

The infant described by Slater et al. [1988] with del(6)(q11q15) had psychomotor retardation, failure to thrive, micrognathia, high arched palate, short neck, long slender fingers, long flat feet with prominent heels, a large umbilical hernia requiring surgery, and undescended testis. A 3-month-old girl reported by Lonardo et al. [1988] with del(6)(q12q14) had failure to thrive, developmental delay, dysmorphic facies, abnormal palmar creases, and umbilical hernia.

The association of abnormal growth and development together with facial anomalies is a common denominator to most contiguous or deletion syndromes. Yet, the occurrence of umbilical and inguinal hernias, which seem to point to a defect in connective tissue is not as common. An umbilical hernia was reported in all cases

TABLE I. Clinical Manifestations of Patients With 6q Proximal Deletions

	Slater et al., 1988	Lonardo et al., 1988	McNeal et al., 1977	Yamamoto et al., 1985	Young et al., 1986	Turleau et al., 1988	Present case, 1996
Deleted segment	q11–q15	q12–q14	q13–q15	q13–q15	q13–q15	q14–q16	q13–q15
Sex	M	F	F	M	F	F	M
Age	9 m	3 m	36 m	13 y	32 m	24 m	24 m
Gestation	37 w	Term	37 w		Term	Term	Term
Birthweight (g)	2,260	2,800	2,600	3,200	2,420	2,800	2,775
Failure to thrive	+	+	+	+	+	−	+
Short stature	+	+	−	+	+	−	+
Microcephaly	+	+	+	Macro	−	+	−
Mongolian slant	−	+	+	+	+	+	+
Small palpebral fissures	+		+				+
Epicanthic folds		+	−	+	+	+	
Strabismus		+			+		
Low set ears	−		+	+	−	−	+
Micrognathia	+	+			−		+
Short neck	+	−	+	+	+	+	+
Congenital heart disease		VSD	PDA	PDA	−		−
Cryptorchidism	+						+
Umbilical hernia	+	+	+	+	+	+	+
Ectopic kidney			+	+			+
Abnormal palmar creases		+	+	+	+		+
Syndactyly fingers/toes			+		−	+	−
Club feet						+	+
Stiff joints				+	−	+	+
Joint laxity	+	+	+	+	+		+
Hyperextensible skin	+	+	+	+	+		+
Micropenis	+				+		+
Mental retardation	+	+	+	+	+	+	+
Hypotonia		+				+	+

with proximal deletions (cen→q15) and in one case with del(6)(q15–q21) [Glover et al., 1988].

The review of the physical findings described in the literature suggests a unique and recognizable pattern of malformations associated with the interstitial 6q proximal deletions. These include dysmorphic facies, failure to thrive, developmental delay, abnormal palmar creases and umbilical and inguinal hernias. The del(6)(q13–q15) reported in this study further contributes to the ascertainment of certain anomalies to this specific region on chromosome 6q.

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